

CLAIMS

1. A countercurrent process for the continuous esterification of C₁₋₂₂ (fatty) acids with C₁₋₁₀ monoalkanols, C₂₋₅ di- or trialkanols or mixtures thereof in the liquid phase in the presence of heterogeneous catalysts in a preliminary reactor (1) and in a reaction column (3), characterized in that the reaction column (3) is preceded by the preliminary reactor (1) and a separation unit (2) for the purpose of reducing the viscosity of the reaction mixture and the water of reaction is removed from the system via a separation unit (2) to displace the reaction equilibrium before the reaction column (3).
2. A process as claimed in claim 1, characterized in that nitrogen is fed in at the lowermost plate of the reaction column (3) in order to increase the vapor load in the lower part of the reaction column.
3. A process as claimed in claim 1 and/or 2, characterized in that nitrogen is fed in as stripping agent at the lowermost plate of the reaction column (3) for additionally removing the water of reaction.
4. A process as claimed in any of claims 1 to 3, characterized in that nitrogen is fed in at the lowermost plate of the reaction column (3) for the purpose of deodorization.
5. A process as claimed in any of claims 1 to 4, characterized in that the preliminary reactor (1) is a fixed-bed reactor.
6. A process as claimed in any of claims 1 to 5, characterized in that the esterification is carried out at temperatures of 50 to 200°C and preferably at temperatures of 80 to 150°C.
7. A process as claimed in any of claims 1 to 6, characterized in that the (fatty) acids are esterified with C₁₋₁₀ monoalkanols, preferably with C₁₋₈ monoalkanols and more particularly with isopropanol or 2-ethylhexanol.
8. A process as claimed in any of claims 1 to 6, characterized in that the (fatty) acids are esterified with C₂₋₅ di- or trialkanols, preferably with C₂₋₃ di- or trialkanols and more particularly with glycerol.

9. A process as claimed in any of claims 1 to 8, characterized in that the fatty acids used are C₆₋₂₂ fatty acids, preferably C₈₋₁₈ fatty acids and more particularly C₁₀₋₁₆ fatty acids.
10. A process as claimed in any of claims 1 to 6, characterized in that
5 C₁₋₅ carboxylic acids are esterified with C₂₋₃ di- or trialkanols and, more particularly, acetic acid is esterified with glycerol.
11. A process as claimed in any of claims 1 to 10, characterized in that the esterification catalysts used are selected from the group consisting of organic or inorganic, basic or acidic anion or cation exchangers or acidic
10 clays, zeolites or specially worked up bleaching earths and catalysts based on transition metals.
12. A process as claimed in any of claims 1 to 11, characterized in that acidic cation exchangers are used as the catalyst.